

Application No.: 10/659,485
Amendment dated: March 10, 2008
In reply to Office Action dated: September 10, 2007

Docket No.: 27592-00373-US1

REMARKS

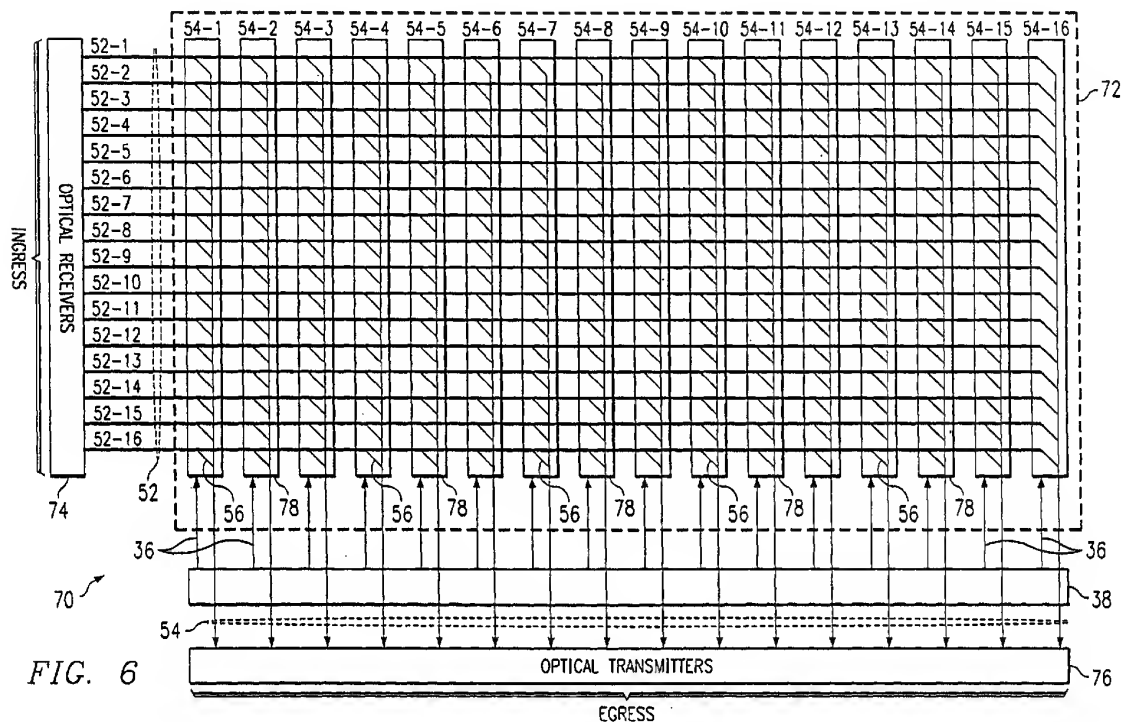
Claims 1-62 and 68 are pending in the application. Claims 63-67 have been previously cancelled. Claims 1, 8, 11, 19, 22, 31, 35, 43, 45 and 57 have been amended by way of the present amendment. Reconsideration is respectfully requested.

In the outstanding Office Action, claims 24, 25, 36 and 52 were rejected under 35 U.S.C. Section 112, first paragraph; claims 1-5, 8-10, 22-28, 31-40, 43-48, 50-54, 57-62 and 68 were rejected on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-73 of U.S. Patent No. 6,665,496 (Miles et al.); claims 6-7, 29-30, 41-42 and 55-56 were rejected on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-73 of Miles et al. in view of U.S. Patent Application Publication No. 2002/0048066 (Antoniades et al.); claims 1-5, 8-10, 22-28, 31-40, 43-48, 50-54, 57-62 and 68 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over U.S. Patent No. 6,763,192 (Jagannathan); claims 11, 12, 14-16, 19-21 and 45 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Jagannathan in view of U.S. Patent No. 5,757,526 (Shiragaki et al.); claims 6-7, 29-30, 41-42 and 55-56 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Jagannathan in view of Antoniades et al.; claims 11-12 and 14-16 were rejected 13 and 19-21 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Jagannathan in view of U.S. Patent Application Publication No. 2002/0163693 (Rubissa et al.) or in the alternative Rubissa et al. in view of Jagannathan; and claims 17-18 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Rubissa et al. in view of Antoniades et al.

35 U.S.C. Section 112 Rejections

Claims 24, 25, 36 and 52 were rejected under 35 U.S.C. Section 112, first paragraph. Reconsideration is respectfully requested.

It is respectfully submitted that the disclosure of **FIG. 6** below and specification provides an enabling teaching of an N-to-1 switching element comprising an N-to-1 semiconductor optical



amplifier (SOA). In particular, the specification discloses the SOA switching elements **78** of **FIG. 6** as sixteen input (i.e., labeled **52-1**, **52-2** . . . **52-16**) and, one output (i.e., labeled **54**) SOAs (i.e., 16-to-1 SOAs).¹ That is an N-to-1 SOA **78** where N = 16. Further, the exemplary embodiment of **FIG. 6** further discloses sixteen of these SOAs **78** (i.e., further labeled **54-1**, **54-2** . . . **54-16**) making up a cross-bar switch **72**. Furthermore, the specification discloses the operation of the SOA comprising opening and closing path switches **56**.² Moreover, since these switches can be bi-directional, it is respectfully submitted that the figures and specification of the

¹ U.S. Patent Application Publication No. 2006/0083460 at page 6, paragraph [0049], lines 14-26.

² *Id.* at page 6, paragraph [0049], lines 26- end of paragraph and [0051].

application is enabling in disclosing both N-to-1 and 1-to-N SOAs and respectfully requested that the outstanding rejection be withdrawn.

Double Patenting Rejections

Claims 1-5, 8-10, 22-28, 31-40, 43-48, 50-54, 57-62 and 68 were rejected on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-73 of Miles et al.

Claims 6-7, 29-30, 41-42 and 55-56 were rejected on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-73 of Miles et al. in view of Antoniades et al.

As noted in the outstanding Office Action, a terminal disclaimer in compliance with 37 C.F.R. Section 1.321(c) or Section 1.321(d) may be used to overcome the above-discussed non-statutory double patenting rejection provided the conflicting application or patent is shown to be commonly owned with the present application. (See 37 C.F.R. Section 1.130(b)).

Terminal Disclaimer and Statement of Common Ownership

A terminal disclaimer is attached to the present statement establishing the common ownership and is discussed in the section below.

As noted in the outstanding Office Action, the above-discussed rejection can be overcome by showing that the subject matter of the reference and the claimed invention were, *at the time the invention was made*, owned by the same person or subject to an assignment to the same person. (See 35 U.S.C. 103(c) and MPEP 706.02(1)(1) and 706.02(1)(2)).

The present application (U.S. Application No. 10/659,485) and U.S. Patent No. 6,665,495 (Miles et al.) were, *at the time the invention of the present application was made*, commonly

owned by the same party, Yotta Networks, Inc. This is evidenced by the assignee, as indicated on the face of the Miles et al. patent and the assignment from the inventor of the present application which is recorded at **Reel 014945** and **Frame 0184** for U.S. Application No. 10/659,485. Therefore, in view of the terminal disclaimer attached hereto from the current assignee and the common ownership discussed above, it is respectfully submitted that the rejection of claims 1-5, 8-10, 22-28, 31-40, 43-48, 50-54, 57-62 and 68 over claims 1-73 of Miles et al. and the rejection of claims 6-7, 29-30, 41-42 and 55-56 over claims 1-73 of Miles et al. in view of Antoniades et al. has been overcome.

35 U.S.C. Section 103 Rejections

Claims 1-5, 8-10, 22-28, 31-40, 43-48, 50-54, 57-62 and 68 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Jagannathan. Reconsideration is respectfully requested.

Independent claim 1 has been amended to clarify the invention. In particular, claim 1 has been amended to recite:

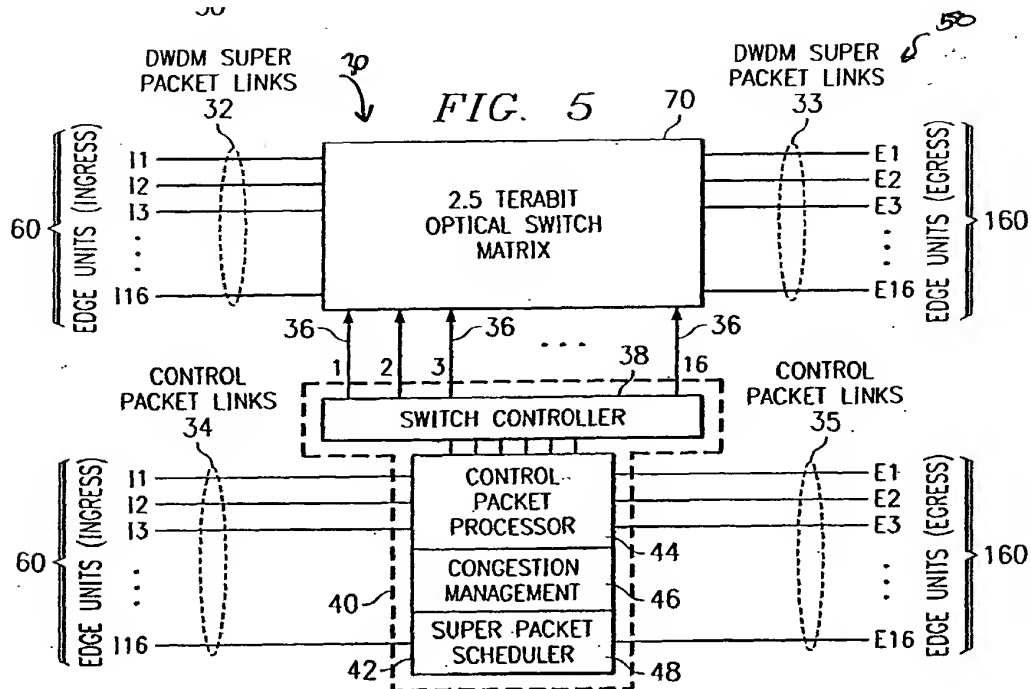
[a]n optical switch fabric, comprising:
 at least one optical switching matrix comprising
 a plurality of input links;
 a plurality of output links, wherein each of the plurality of
input links intersects with each of the plurality of output links;
 a plurality of path switches with one path switch located at
each intersection of an input link and an output link;
 a switch controller to ensure the capacity of the plurality of
the output links is not exceeded; and
 a packet scheduler to receive and process a plurality of
control packet data links,
 wherein each of the plurality of path switches is operable to
communicate optical data from intersecting input link to an
intersecting output link, and
 wherein each of the plurality of path switches is
configurable to close or open to create a plurality of unique paths
in a given switching time interval for transporting the optical data

through the optical switching matrix without contention or congestion.

Independent claims 11, 22, 35 and 45 have been similarly amended and dependent claims 8, 19, 31 and 43 have been amended to be consistent with the independent claims. Support for the amendments is provided by the figures and text of the original application. In particular, **FIG. 5** below and the specification discloses core controller **40** can comprise a super packet scheduler **42** that can further comprise separate modules including a control packet processor module **44**, a congestion management module **46** and a scheduler module **48**, wherein the congestion management performed by the congestion management module **46** can include monitoring, reserving and allocating a path through the router **50** to avoid congestion.³ Further, the original application discloses every data packet arriving at an ingress edge unit **60** can be routed to an egress edge unit **160** without contention with any other data packet so long as the capacity of each of the individual ingress super packet links **32** and egress super packet links **33** is not exceeded and that the core controller **40** manages this control feature to ensure that this egress

³ U.S. Patent Application Publication No. 2006/0083460 at page 4, paragraph [0037], lines 6-30.

super packet link 33 capacity is not exceeded.⁴



Furthermore, the specification discloses the packet scheduler 42 can receive and process control packet data from the ingress edge units 60 over the ingress control packet links 34.⁵ Therefore, the amendments raise no questions of new matter.

Jagannathan discloses optical switching elements, such as a Semiconductor Optical Amplifier (SOA), that would be electrically controlled to switch in the nano-second response range; and a switching matrix, made of a number of SOAs and controlled by routing protocols and a resource management software or hardware, that will enable optical routers to act as a synchronous or asynchronous and fixed or variable length packet switching apparatus.⁶ In particular, as shown in **FIG. 5**, Jagannathan discloses a functional diagram for the optical packet

⁴ *Id.* at page 4, paragraph [0036], lines 6-15.

⁵ *Id.* at page 4, paragraph [0040], lines 1-3.

⁶ Jagannathan at column 1, lines 29-37.

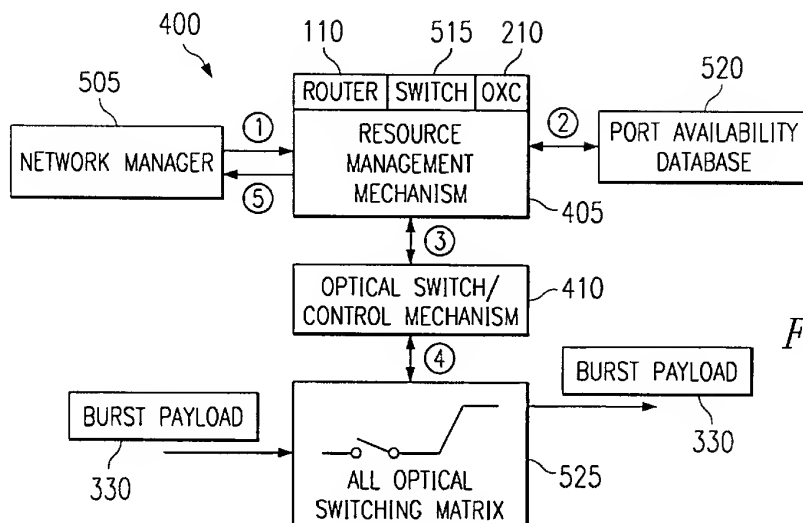


FIG. 5

switching apparatus **400** includes a network manager **505**, a resource management mechanism **405**, a port availability database **520**, an optical switch control mechanism **410**, and an optical switching matrix **525**.⁷ Further, Jagannathan discloses that when the resource management mechanism **405** is functioning as a router, it transmits detailed mapping information to the switch control mechanism **410** on how to map an optical path from an input to an output port in the optical switching matrix **525** and that the mapping information also includes how long the optical path should remain open.⁸

However, Jagannathan nowhere discloses as independent claims 1, 22, 35, 45 and 57 recite:

a switch controller to ensure the capacity of the plurality of the output links is not exceeded; and
a packet scheduler to receive and process a plurality of control packet data links.

⁷ *Id.* at FIG. 5 and column 4, lines 33-41.

⁸ *Id.* at FIG. 5, and column 4, lines 47-55.

That is, Jagannathan nowhere discloses ensuring the capacity of the output links is not exceeded and a packet scheduler that receives and processes a plurality of control links. Therefore, it is respectfully submitted that Jagannathan does not disclose, suggest or make obvious the claimed invention and that claims 1, 22, 35, 45 and 57, and claims dependent thereon patentably distinguish thereover.

Claims 11, 12, 14-16, 19-21 and 45 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Jagannathan in view of Shiragaki et al. Reconsideration is respectfully requested.

As discussed above, the independent claims, including claims 11 and 45, have been amended to distinguish over Jagannathan. Thus, for at least for the same reasons discussed above, Jagannathan does not disclose the limitations of claim 11, 45 and claims dependent thereon.

In addition, the outstanding Office Action acknowledges other deficiencies of Jagannathan and attempts to overcome these deficiencies by combining Jagannathan with Shiragaki et al. However, Shiragaki et al. cannot overcome all of the deficiencies of Jagannathan, as will be discussed below.

Shiragaki et al. discloses an optical communication network for quickly detecting faults and rerouting data using the optical signals in their light form, superimposes a monitoring signal on an optical data signal.⁹ However, Shiragaki et al. nowhere discloses as independent claims 1 and 45 recite:

a switch controller to ensure the capacity of the plurality of the output links is not exceeded; and
a packet scheduler to receive and process a plurality of control packet data links.

⁹ Shiragaki et al. at ABSTRACT.

That is, Shiragaki et al. nowhere discloses ensuring the capacity of the output links is not exceeded and a packet scheduler that receives and processes a plurality of control links. Thus, Shiragaki et al. cannot overcome all of the deficiencies of Jagannathan. Therefore, it is respectfully submitted that neither Jagannathan nor Shiragaki et al., whether taken alone or in combination, do not disclose, suggest or make obvious the claimed invention and that claims 1 and 45, and claims dependent thereon, patentably distinguish thereover.

Claims 6-7, 29-30, 41-42 and 55-56 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Jagannathan in view of Antoniades et al. Reconsideration is respectfully requested.

Claims 6-7, 29-30, 41-42 and 55-56 ultimately depend upon independent claims 1, 22, 35 and 45, respectively. As discussed above, the independent claims 1, 22, 35 and 45, have been amended to patentably distinguish over Jagannathan. Thus, for at least for the same reasons discussed above, Jagannathan does not disclose the limitations of and claims 6-7, 29-30, 41-42 and 55-56 dependent thereon.

In addition, the outstanding Office Action acknowledges other deficiencies of Jagannathan and attempts to overcome these deficiencies by combining Jagannathan with Antoniades et al. However, Antoniades et al. cannot overcome all of the deficiencies of Jagannathan, as will be discussed below.

Antoniades et al. discloses a wavelength selective optical cross-connect includes a first demultiplexor feeding into individually removable modules that in turn feed a first multiplexor, such that the cross-connect is expandable and repairable on a wavelength or waveband basis.¹⁰ However, Antoniades et al. nowhere discloses as independent claims 1, 22, 35 and 45 recite:

a switch controller to ensure the capacity of the plurality of the output links is not exceeded; and

¹⁰ Antoniades et al. at ABSTRACT.

a packet scheduler to receive and process a plurality of control packet data links.

That is, Antoniades et al. nowhere discloses ensuring the capacity of the output links is not exceeded and a packet scheduler that receives and processes a plurality of control links. Thus, Antoniades et al. cannot overcome all of the deficiencies of Jagannathan. Therefore, it is respectfully submitted that neither Jagannathan nor Antoniades et al., whether taken alone or in combination, do not disclose, suggest or make obvious the claimed invention and that claims 1, 22, 35 and 45, and claims dependent thereon, patentably distinguish thereover.

Claims 11-12 and 14-16 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Rubissa et al. Reconsideration is respectfully requested.

Rubissa et al. discloses a method and system for switching and routing, while logically managing and controlling, multichannel optical signals in an optical communication system. However, Rubissa et al. nowhere discloses as independent claims 11 recites:

a switch controller to ensure the capacity of the plurality of the output links is not exceeded; and
a packet scheduler to receive and process a plurality of control packet data links.

That is, Rubissa et al. nowhere discloses ensuring the capacity of the output links is not exceeded and a packet scheduler that receives and processes a plurality of control links. Therefore, it is respectfully submitted that neither Rubissa et al. does not disclose, suggest or make obvious the claimed invention and that claims 11, and claims dependent thereon, patentably distinguish thereover.

Claims 13 and 19-21 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Jagannathan in view of Rubissa et al. or in the alternative Rubissa et al. as applied to claims 11-12 and 14-16 and further in view of Jagannathan. Reconsideration is respectfully requested.

Claims 13 and 19-21 are ultimately dependent upon claim 11. As discussed above, the independent claims, including claim 11, have been amended to distinguish over both Rubissa et al. and Jagannathan. Thus, for at least for the same reasons discussed above, neither Rubissa et al. nor Jagannathan disclose the claims 13 and 19-21. In addition, the outstanding Office Action acknowledges other deficiencies of Jagannathan and Rubissa et al. and attempts to overcome these deficiencies by combining Jagannathan with Rubissa et al. However, for the same reasons discussed above, neither Rubissa et al. nor Jagannathan, whether taken alone, in combination or in the alternative do not disclose the limitations of claims 13 and 19-21 and therefore, claims 13 and 19-21 patentably distinguish thereover.

Claims 17-18 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Rubissa et al. in view of Antoniades et al. Reconsideration is respectfully requested.

Claims 17-18 are ultimately dependent upon claim 11. As discussed above, neither Rubissa et al. nor Antoniades et al., whether taken alone or in combination, disclose the limitations of claim 11. Thus, at least for those reasons, neither Rubissa et al. nor Antoniades et al., whether taken alone or in combination disclose the limitation of claims 17-18, and that claims 17-18, patentably distinguish thereover.

Conclusion

In view of the above, consideration and allowance are respectfully solicited.

In the event the Examiner believes an interview might serve in any way to advance the prosecution of this application, the undersigned is available at the telephone number noted below.

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Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 22-0185, under Order No. 27592-00373-US1 from which the undersigned is authorized to draw.

Dated: March 10, 2008

Respectfully submitted,

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